



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/777,002	02/05/2001	Gregory Hagan Moulton	16192.76.3	5465
22913	7590	03/03/2008	EXAMINER	
WORKMAN NYDEGGER			PHILLIPS, HASSAN A	
60 EAST SOUTH TEMPLE			ART UNIT	
1000 EAGLE GATE TOWER			PAPER NUMBER	
SALT LAKE CITY, UT 84111			2151	
			MAIL DATE	DELIVERY MODE
			03/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/777,002	Applicant(s) MOULTON ET AL.	
	Examiner HASSAN PHILLIPS	Art Unit 2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 12-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 12-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to communications filed November 21, 2007.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on November 21, 2007 has been entered.

Claim Objections

3. Claim 1 is objected to because of the following informalities: the claim language is unclear. Examiner believes the word "with" should be inserted between "associated" and "the" in the 9th line of the claim to clarify the claim language. Appropriate correction is required.

4. Claim 23 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s)

Art Unit: 2151

in proper dependent form, or rewrite the claim(s) in independent form. The selecting step comprising "matching the desired criteria to a context associated with the one or more storage nodes" is recited in amended independent claim 14, on which claim 23 depends.

Response to Arguments

5. Applicant's arguments with respect to claims 1-7 and 12-30 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-7, 14, 16-19, 23-25, 27, 28, are rejected under 35 U.S.C. 102(e) as being anticipated by Pothapragada et al. (hereinafter Pothapragada), U.S. Patent 6,389,432.

8. In considering claim 1, Pothapragada discloses a data storage system comprising: a plurality of storage nodes (i.e. 103, 112, 122), each node existing at a physical location and each storage node having one or more associated contexts that define characteristics of each storage node, the contexts including a political context, an economic context, a geographic context or a network topological context (i.e. local node, SAN node, LAN/WAN node, storage framework node), (col. 3, line 66-col. 4, line 14, also see col. 7, lines 36-55); interface mechanisms coupled to each storage node for communicating storage access requests with the storage node, at least one storage access request including performance criteria that define storage characteristics that are desired for data associated with the storage access requests, (col. 1, lines 60-67); and data storage management processes that select one or more of the storage nodes to serve the at least one data storage request based at least in part upon the one or more contexts associated with each of the storage nodes that satisfy the performance criteria, wherein the one or more contexts are used to discriminate differences between the plurality of storage nodes and identify the selected one or more storage nodes to serve the at least one data storage request, (col. 1, lines 60-67, and col. 7, lines 36-55).

9. In considering claim 2, Pothapragada discloses the data storage management processes comprise computer-implemented processes executing in at least one of the storage nodes, (col. 7, lines 13-24).

10. In considering claim 3, Pothapragada discloses the data storage management processes comprise computer-implemented processes executing in all of the storage nodes, (col. 7, lines 13-24).

11. In considering claim 4, Pothapragada discloses the performance criteria identify storage characteristics including one or more of cost, location, security, availability, or network connectivity, (col. 3, lines 1-19).

12. In considering claim 5, Pothapragada discloses the data storage management processes comprise processes for matching the performance criteria to the contexts of the storage nodes, (col. 1, lines 60-67, and col. 7, lines 36-55).

13. In considering claim 6, Pothapragada discloses the data storage management processes present a unitary logical volume of data storage to external devices generating the storage access requests to the selected one or more storage nodes, (col. 7, lines 36-55).

14. In considering claim 7, Pothapragada discloses wherein the selected one or more storage nodes are selected such that the contexts of the selected one or more storage nodes that are associated with the unitary logical volume satisfy the performance criteria associated with the storage access requests, (col. 1, lines 60-67, and col. 7, lines 36-55).

15. In considering claim 14, Pothapragada discloses a method of managing distributed data storage comprising the acts of: providing a plurality of storage nodes (i.e. 103, 112, 122), each node existing at a physical location and each node having one or more associated contexts that define storage characteristics of each node, the contexts including a political context, an economic context, a geographic context or a network topological context (i.e. local node, SAN node, LAN/WAN node, storage framework node), (col. 3, line 66-col. 4, line 14, also see col. 7, lines 36-55); receiving a data storage task in one of the storage nodes, (col. 3, lines 9-19); determining desired criteria associated with the received data storage task, wherein the desired criteria define storage characteristics for the data storage task, (col. 1, lines 60-67); selecting one or more of the plurality of storage nodes by matching the desired criteria to the associated contexts, wherein the selected one or more of the plurality of storage nodes have contexts that satisfy the desired criteria, (col. 1, lines 60-67, and col. 7, lines 36-55); and executing the storage task in the one or more selected storage nodes, (col. 3, lines 9-19).

16. In considering claim 16, Pothapragada discloses the selected storage nodes comprise at least two storage nodes and the at least two storage nodes are located in different geographical locations, (col. 7, lines 36-55).

17. In considering claim 17, Pothapragada discloses the selected storage nodes comprise at least two storage nodes and the at least two storage nodes are located in different areas of a single data center, (col. 7, lines 36-55).

18. In considering claim 18, Pothapragada discloses the selected storage nodes comprise at least two storage nodes and the at least two storage nodes are connected via different network backbones in a single data center, (col. 7, lines 36-55).

19. In considering claim 19, Pothapragada discloses the selected storage nodes comprise at least two storage nodes and the at least two storage nodes are located in different data centers, (col. 7, lines 36-55).

20. In considering claim 23, Pothapragada discloses wherein the selecting step further comprises matching the desired criteria to a context associated with the one or more storage nodes, (col. 1, lines 60-67, and col. 7, lines 36-55).

21. In considering claim 24, Pothapragada discloses wherein the act of storing comprises storing the data according to a distributed parity scheme analogous to parity distribution found in RAID subsystems, (col. 4, lines 47-67).

22. In considering claim 25, Pothapragada discloses wherein the parity paradigm comprises an N-dimensional parity mechanisms where "N" is greater than three, (col. 4, lines 47-67).

23. In considering claim 27, Pothapragada discloses a data storage service comprising: receiving data storage access requests from a file system (i.e. requester), the storage access requests including performance criteria that defines storage requirements for data associated with the storage access requests, (col. 1, lines 60-63); maintaining a state information data structure including state information describing the contexts of a number of network-accessible storage devices (i.e. 103, 112, 122), wherein the contexts include a political context, an economic context, a geographic context or a network topological context (i.e. local node, SAN node, LAN/WAN node, storage framework node) and wherein the contexts are used to discriminate between storage characteristics of the number of network-accessible storage devices, (col. 3, line 66-col. 4, line 14, also see col. 7, lines 36-55); and using the state information to allocate capacity within the network-accessible storage devices to handle the received data storage request by using capacity having contexts that satisfy the performance criteria, (col. 1, lines 60-67, and col. 7, lines 36-55).

24. In considering claim 28, Pothapragada discloses wherein the act of maintaining the state information data structure comprises: detecting a change in state information associated with at least one of the network-accessible storage devices, (col.

Art Unit: 2151

10, line 52-col. 11, line 15); and updating the state information associated with the at least one network-accessible storage device to include the change in state information, (col. 10, line 52-col. 11, line 15).

25. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pothapragada in view of McClain, U.S. patent 5,794,254 (supplied by applicant).

26. In considering claim 12, although the disclosed system of Pothapragada shows substantial features of the claimed invention, it fails to expressly disclose: encrypting storage access requests during communication between nodes.

Nevertheless, encrypting requests during communication was well known in the art at the time of the present invention. This is exemplified in a similar field of endeavor where McClain discloses a method and system for backing up computer files at a remote site comprising: encrypting a storage request during communication, (col. 6, lines 48-53).

Thus, given the teachings of McClain it would have been apparent to one of ordinary skill to modify the teachings of Pothapragada to show encrypting request messages during communication. This would have provided a secure and safe means for storing data over a network, while preventing the data from being read by unauthorized individuals.

Art Unit: 2151

27. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pothapragada in view of Burns et al. (hereinafter Burns), U.S. patent 5,931,947.

28. In considering claim 13, although the disclosed system of Pothapragada shows substantial features of the claimed invention, it fails to expressly disclose: authenticating storage nodes before communicating storage requests.

Nevertheless, authenticating storage nodes before communicating storage requests was well known in the art at the time of the present invention. This is exemplified in a similar field of endeavor where Burns discloses, in the background of the invention, authenticating storage nodes before communicating storage requests, (col. 1, lines 53-56).

Thus, given the teachings of Burns it would have been apparent to one of ordinary skill to modify the teachings of Pothapragada to show authenticating storage nodes before communicating storage requests. This would have advantageously provided a secure and safe means for storing data over a network, while verifying the data is coming from authorized individuals, (Burns, col. 1, lines 53-56).

29. Claims 15, 26, are rejected under 35 U.S.C. 103(a) as being unpatentable over Pothapragada in view of Carter et al. (hereinafter Carter), U.S. Patent 5,987,506.

30. In considering claim 15, Pothapragada discloses wherein the selected storage nodes comprise at least two storage nodes where neither of the at least two storage nodes individually satisfy the desired criteria, (col. 7, lines 36-55).

Although the teachings of Pothapragada disclose substantial features of applicant's claimed invention, they fail to expressly disclose: the at least two storage nodes collectively satisfying the desired criteria.

Nevertheless, storing data in a set of distributed network devices was well known in the art at the time of the present invention. Carter exemplifies this, where Carter teaches storing data in a set of distributed network devices, (col. 3, lines 10-17).

Thus, given the teachings of Carter, it would have been obvious to one of ordinary skill in the art to modify the teachings of Pothapragada with the teachings of Carter to disclose the at least two storage nodes collectively satisfying the desired criteria. This would have advantageously provided a much larger storage space for the data than the amount of space that is available on one network device, (Carter, col. 3, lines 28-30), and thus efficiently located drives that can satisfy the desired criteria, (Pothapragada, col. 7, lines 36-55).

31. In considering claim 26, although the teachings of Pothapragada disclose substantial features of applicant's claimed invention, they fail to expressly disclose: storing the data in a manner such that the data stored in any one storage node cannot be used in any meaningful fashion without the availability of some or all of the data stored in other storage nodes.

Nevertheless, storing data in a set of distributed network devices was well known in the art at the time of the present invention. Carter exemplifies this, where Carter teaches storing data in a set of distributed network devices, (col. 3, lines 10-17).

Thus, given the teachings of Carter, it would have been obvious to one of ordinary skill in the art to modify the teachings of Pothapragada with the teachings of Carter to disclose storing the data in a manner such that the data stored in any one storage node cannot be used in any meaningful fashion without the availability of some or all of the data stored in other storage nodes. This would have advantageously provided a much larger storage space for storing the data than the amount of space that is available on one network device, (Carter, col. 3, lines 28-30).

32. Claims 20-22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Pothapragada in view of Applicant's Admitted Prior Art (AAPA).

33. In considering claims 20 and 21, Pothapragada discloses wherein the selected storage nodes comprise at least two storage nodes, (col. 7, lines 36-55).

Although the teachings of Pothapragada disclose substantial features of applicant's claimed invention, they fail to expressly disclose: the at least two storage nodes are located in different cities or different political jurisdictions.

Nevertheless, storage nodes being located in different cities and different political jurisdictions were well known in the art at the time of the present invention. Applicant

Art Unit: 2151

acknowledges this in applicant's disclosure, (see AAPA, pg. 4, lines 15-18, and pg. 5, lines 1-9).

Thus, if not implicit in the teachings of Pothapragada, it would have been obvious to one of ordinary skill in the art to modify the teachings of Pothapragada to expressly disclose the at least two storage nodes are located in different cities or different political jurisdictions. As was known in the art this would have provided for affecting the availability of network devices, and allowing and restricting certain types of data stored in the network devices, (AAPA, pg. 4, lines 15-18, and pg. 5, lines 1-9).

34. In considering claim 22, Pothapragada discloses wherein the selection is based upon attributes of the physical location of the data storage node, (col. 1, lines 60-67, and col. 7, lines 36-55).

Although the teachings of Pothapragada disclose substantial features of applicant's claimed invention, they fail to expressly disclose: the attributes being socio-economic attributes of the physical location of the data storage node.

Nevertheless, it was well known in the art at the time of the present invention that society places socio-economic constraints on data. Applicant acknowledges this in applicant's disclosure, (see AAPA, pg. 4, lines 28-30).

Thus, if not implicit in the teachings of Pothapragada, it would have been obvious to one of ordinary skill in the art to modify the teachings of Pothapragada to expressly disclose the attributes being socio-economic attributes of the physical location of the

Art Unit: 2151

data storage node. As was known in the art this would have allowed for accessing the data storage node based on cost, (AAPA, pg. 4, line 28-pg. 5, line 3).

35. Claims 29, 30, are rejected under 35 U.S.C. 103(a) as being unpatentable over Pothapragada.

36. In considering claim 29, Pothapragada discloses dynamically re-allocating capacity within the network-accessible storage devices, (col. 9, lines 5-30); and, detecting a change in the network-accessible storage devices associated contexts, (col. 10, line 52-col. 11, line 15).

Although the teachings of Pothapragada disclose substantial features of applicant's claimed invention, they fail to expressly disclose: dynamically re-allocating in response to the detecting.

Nevertheless, dynamically re-allocating capacity within network-accessible storage devices, in response to detecting a change in the network-accessible storage devices associated contexts was well known in the art at the time of the present invention for replacing failed systems or systems that needed to be taken off line.

Thus, if not implicit in the teachings of Pothapragada, it would have been obvious to one of ordinary skill in the art to modify the teachings of Pothapragada to expressly disclose dynamically re-allocating in response to the detecting. As was known in the art this would have provided a reliable system by re-allocating capacity to an alternate

Art Unit: 2151

network device in cases where the original network device failed, or needed to be taken off-line, (Pothapragada, col. 10, line 52-col. 11, line 15).

37. In considering claim 30, the teachings of Pothapragada provide for the dynamic re-allocating being done in the absence of an externally generated data storage access request, (col. 10, line 52-col. 11, line 15).

Conclusion

38. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HASSAN PHILLIPS whose telephone number is (571)272-3940. The examiner can normally be reached on Mon-Fri (8am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2151

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'H. Phillips', with a stylized flourish at the end.

Hassan Phillips
Examiner, Art Unit 2151